

LISTING OF THE CLAIMS

1. (Currently amended) An implant for connective tissue substitution in an animal, said implant comprising:

- (a) a pair of bone anchors;
- (b) at least one support filament joining said bone anchors at their proximal ends, said bone anchors having been joined with said support filament *ex vivo*; and
- (c) at least one matrix layer coating said support filament, wherein said matrix layer is in contact with said bone anchors;

wherein said matrix layer is of sufficient thickness ~~sufficient~~ to allow for colonization by a cell and wherein said implant in its entirety is dehydrated or lyophilized prior to implantation.

2. (Original) The implant according to claim 1, wherein said matrix layer is colonized by a cell.

3. (Original) The implant according to claim 1, wherein said connective tissue substitution is partial or complete substitution of a connective tissue.

4. (Original) The implant according to claim 1, wherein said connective tissue is selected from the group consisting of a tendon, a cartilage, a disk, a meniscus, a muscle, a tooth, a hair, a joint, and a ligament, or a combination thereof.

5. (Original) The implant according to claim 1, wherein said animal is a human.

6. (Original) The implant according to claim 1, wherein said animal is a non-human mammal.

7. (Previously presented) The implant according to claim 1, wherein said bone anchor is selected from the group consisting of a bone portion and a piece composed of

(a) a natural biocompatible porous material; (b) a synthetic biocompatible porous material; or
(c) both (a) and (b).

8. (Original) The implant according to claim 1, wherein said matrix layer is a collagen gel layer.

9. (Previously presented) The implant according to claim 1, wherein said matrix layer is selected from the group consisting of chitosan, glycosaminoglycan, chitin, ubiquitin, elastin, polyethylene glycol, polyethylene oxide, vimentin, fibronectin, and a protein promoting collagen alignment or assembly, or derivatives or a combination thereof.

10. (Previously presented) The implant according to claim 1, wherein said support filament is selected from the group consisting of at least one of a resorbable thread, a natural fiber, and a filament composed of a protein, a lipid, a biocompatible molecule, or a synthetic component.

11. (Original) The implant according to claim 1, wherein said matrix layer further comprises a cell.

12. (Previously presented) The implant according to claim 11, wherein said cell is an autologous cell.

13. (Original) The implant according to claim 11, wherein said cell is a heterologous cell.

14. (Original) The implant according to claim 1, wherein said cell is selected from the group consisting of a fibroblast, a myoblast, an osteoblast, a mesenchymal cell, an endothelial cell, an immune cell, and a chondrocyte cell, or a combination thereof.

15. (Previously presented) The implant according to claim 1, wherein said matrix layer further comprises a pharmaceutically effective amount of a biologically active molecule selected from the group consisting of a drug, a growth factor, a cytokine, an antibiotic, and a hormone, or a combination thereof.

16. (Cancelled)

17. (Original) The implant according to claim 1, wherein said matrix layer further comprises at least one inner layer of gel and/or filament coated by at least one supplementary matrix coating layer.

18. (Previously presented) The implant according to claim 17, wherein said inner layer is dehydrated and said filament is dehydrated or lyophilized prior to being incorporated to said matrix layer.

19. (Previously presented) The implant according to claim 17, wherein said implant is dehydrated or lyophilized prior to coating with said supplementary matrix coating layer.

20. (Original) The implant according to claim 19, wherein said supplementary matrix coating layer is further dehydrated or lyophilized before being coated by another supplementary matrix coating layer.

21. (Original) The implant according to claim 17, wherein said matrix coating layer further comprises a cell.

22. (Previously presented) The implant according to claim 21, wherein said cell is an autologous cell.

23. (Original) The implant according to claim 21, wherein said cell is a heterologous cell.

24. (Original) The implant according to claim 21, wherein said cell is selected from the group consisting of a fibroblast, a myoblast, an osteoblast, a mesenchymal cell, an endothelial cell, an immune cell, and a chondrocyte, or a combination thereof.

25-44. (Cancelled)

45. (Previously presented) The implant according to claim 8, wherein said collagen is a recombinant collagen.

46. (Previously presented) The implant of claim 8, wherein said collagen is selected from the group consisting of types I, II and III collagen.

47. (Previously presented) The implant of claim 8, wherein the collagen is from an animal tissue source.

48. (Previously presented) The implant of claim 47, wherein said animal tissue is selected from the group consisting of tendon, skin, cornea, bone, cartilage, vertebral disc, cardiovascular tissue and placenta.

49. (Previously presented) The implant of claim 1, wherein said implant is a ligament substitute.

50. (Previously presented) The implant of claim 49, wherein said ligament substitute is selected from the group consisting of an anterior cruciate ligament substitute and a periodontal ligament substitute.